

## 6.11 CULTURAL RESOURCES

### 6.11.1 Affected Environment

#### ***Region of Influence***

The ROI for this project area includes DMR and the proposed easement for Dillingham Trail from SBMR to DMR.

#### ***Native Hawaiian History and Tradition***

The most important places associated with spiritual beings, myths, legendary stories, and oral histories in the vicinity of DMR are located along the shoreline, above the installation on the upper slopes of the mountains, and to the west in Ka'ena.

Perhaps the best known traditional spiritual association with this region is at its westernmost end, Ka'ena Point, where the souls of the dead were believed to begin their journey into the afterlife at Leinaaka'uhane. Every Hawaiian island was said to have such a place; on O'ahu it was this great stone whose name literally means "the leaping off place of ghosts." Also at the point, the demigod Maui is said to have tried to hook the island of Kaua'i with his fishhook, named Manaiaikalani, to bring it closer to O'ahu; the Pōhaku o Kaua'i remains offshore, the only souvenir of the failed effort.

Farther east, the name of the ahupua'a Kawaihāpai (lifted or carried water) commemorates the water that was sent in response to prayers for deliverance from a terrible drought. To combine a number of versions of the legend: After most people had fled the region, two priests who had stayed behind to pray finally saw a hog-shaped cloud coming toward them from the direction of Kahuku; soon after, they saw water pouring from a cliff. The upland spring that watered the region after this miracle was said never to fail.

Several of the ahupua'a of the western Waialua coast, where DMR is located, recognize a fishing god named Kāne'aukai who is said to have floated to the island in the form of a log or a stone looking for his sisters. They in turn were looking for their brother who had been banished from their faraway home. When Kāne'aukai arrived at O'ahu, he turned himself into human form, manifested himself to the fishermen, and became their deity.

Of the archaeological sites on DMR, six appear to have been primarily agricultural in function, with temporary habitation structures frequently included among the terraces or other agricultural field features. The presence of one sacred site, the Site 191 heiau, indicates the possible ceremonial/symbolic importance of the area and the use of at least a portion of the area in traditional Hawaiian ritual activities. Information gathered by McAllister from informants concerning this heiau indicated that its traditional name is Kawailoa Heiau. Yoshinaga (1977) has recommended that Site 416, the Keālia-Kawaihāpai Complex, be preserved as an example of a traditional Hawaiian agricultural complex. Sand deposits underlie the northern (coastal) portion of DMR, and it is possible that Hawaiian burials may be located in these deposits. Burials have been found in the coastal sand dunes north of the installation (Bath 1987).

### ***Historic Overview***

Four ahupua‘a (traditional land units, as discussed in Section 3.11) cross DMR. Most of the installation lies within Keālia and Kawaihāpai, but the western end extends into Ka‘ena and the eastern tip barely reaches into Mokulē‘ia. DMR is located on the western shore of Waialua District, a region noted in the pre-Contact era as the home of many kahuna (magicians, teachers, experts of various kinds) and their schools. This fertile region was a major food supplier for Honolulu markets as the city grew in the 19th century.

Waialua was home during the traditional era to some of O‘ahu’s best and worst rulers. Mā‘ilikūkahi, who ruled in the 14th or 15th century, was raised partly in Waialua and is said to have maintained a kulanakauhale (village) there. Mā‘ilikūkahi is credited on O‘ahu with establishing land divisions that lasted through the traditional era. He is also known for ending human sacrifice and for a benevolent reign that was followed by generations of peace.

The district also saw its share of bad times, including a particularly cruel chief who was eventually driven off by his people. One interpretation of the name Waialua, which may reflect that episode, is “doubly disgraceful.” The legendary cannibals of Helemanō, more often associated with the Helemanō area on the central plateau area, are also said to have tried to settle first in Waialua but to have been driven off.

Archaeological evidence of prehistoric land use and settlement on DMR is limited. Offshore were rich deep water fishing grounds, no doubt exploited by residents of this region. Along the coast fronting DMR was a line of sand dunes in which Hawaiians buried their dead. Evidence of the use of the level area behind the dunes has largely been obliterated by the runway construction, but Handy and Handy indicate that Kawaihāpai once had a sizeable area of lo‘i fields for growing taro, while in Keālia, where the coastal plain is narrower, taro was grown in a narrow strip of land behind the dunes (Handy and Handy, 1972). Along the slope at the foot of the Wai‘anae Mountains are a number of agricultural features, including terraces, indicating the cultivation of crops along the gulches that cut through the area. Handy and Handy mention sweet potatoes, sugar cane, bananas, and ‘awa as crops that would have been planted here (Handy and Handy, 1972). Part of the slope area was set aside as a sacred place, on which Kawailoa Heiau was constructed. The well-watered slopes behind DMR were a source of water that was channeled down the mountainside into the irrigated taro fields below.

The fertile region was home to a thriving community of small land-holders until the advent of large-scale ranching. Missionary John Emerson, who arrived in Waialua in 1832, witnessed serious conflict between native inhabitants and upland ranchers. Cattle and horses, allowed to roam free, damaged or destroyed native gardens and homes; the Hawaiians protested to no avail.

After the Great Mahele, a number of Hawaiians claimed land (often familiar family grounds) from the government. In an 1863 mission report, Emerson claimed that more “common natives” owned land in Waialua than anywhere else on O‘ahu. Both Native Hawaiians and western residents obtained grants of land covering all of DMR. On these lands they cultivated sugar cane and newly introduced crops: wheat, corn, rice, and coffee.

The land that now makes up DMR became a ranch in the 1800s and was also used for sugar farming. DMR was established by EO of the President in 1927, but it did not come into its full use as a military airfield until World War II. In 1948 the Air Force took over administration of DMR. Subsequently the reservation was transferred to the Army, under whose administration it remains (Tomonari-Tuggle 2002).

### ***Previous Consultations and Reports***

#### ***Traditional Cultural Properties Surveys***

No study has been undertaken to identify Native Hawaiian traditional cultural places on DMR, although Anderson (1998) has conducted archival research of Hawaiian traditions and early historic land grants and noted the cultural importance of Site 191, Kawaihoa Heiau.

#### ***Historic Buildings Surveys***

No historic buildings surveys have been undertaken at DMR, although the remnants of some structures were recorded during the archaeological surveys (see discussion below).

#### ***Archaeological Surveys***

DMR and adjacent areas have received numerous archaeological investigations of varying intensities (Anderson 1998; Bath 1987; Drolet and Schilz 1992; McAllister 1933; McGerty and Spear 2001; Moblo 1991; Rosendahl 1977), in addition to field checks by IARII, which used GPS to record accurate location data for archaeological sites (IARII 2003). The Bishop Museum surveyed 65 acres (26.3 hectares) of DMR in 1977. More recently, McGerty and Spear surveyed close to 100 percent of DMR and conducted shovel tests to determine the presence or absence of cultural deposits, to obtain dating and functional information, and to assess site significance. Based on their subsurface testing, McGerty and Spear concluded that the likelihood of finding subsurface traditional Hawaiian deposits increases along the stream banks at the north end of the military reservation, despite World War II land modifications in the area (McGerty and Spear, 2001, 135). The present field check for the SBCT transformation project identified three additional historic or military structures.

### ***Known Prehistoric and Historic Resources***

Nineteen archaeological sites have been identified on DMR, of which three are newly located. Two sites are centrally located and 17 are in the south; four of those are on the southeast boundary near where Dillingham Trail would enter the installation. One site (a ranching period cattle chute, Site 5480) is at the installation boundary where Dillingham Trail would enter DMR (IARII 2003, Chapt. IV).

Anderson (1998) identifies most of the edges of Dillingham as high probability areas, particularly the hill slopes in the southern portion, where several sites have already been recorded and the area has remained relatively undisturbed.

A series of historic dredged channels lie between the base of the mountain range and the flats at the bottom of the mountains in the southern and southeastern portion of DMR. These historic channels represent an important period of DMR history (see McGerty and Spear 2001). The northern flats of DMR were found to have archaeological sites of possible

historical military significance. During the survey by McGerty and Spear (2001), several historic features were recorded, including a loading dock and 11 runway, taxiway, and apron surfaces (IARII 2003). GANDA conducted the first survey of the proposed easement for Dillingham Trail (GANDA 2003b), and they recorded five historic period sites within the corridor. The sites included the Wilson Ditch, an irrigation ditch dated to the early part of the 20<sup>th</sup> century, the Halstead Mill, consisting of a basalt and mortar smokestack dated to the last part of the 19<sup>th</sup> century, and three historic bridges constructed in 1952 (GANDA 2003b).

Table 6-22 provides an overview of prehistoric and historic archaeological sites identified at DMR and their NRHP status. Archaeological sites identified on the installation include seven traditional Hawaiian (prehistoric and early historic) sites, 11 historic agricultural or military sites, and six military sites (Table 6-23) (IARII 2003; GANDA 2003a). Sixteen sites were recommended as eligible for listing on the NRHP, although two buildings (building numbers 30 and 33) of the Nike-Hercules Missile Battery (Site 5492) were demolished in 1997 (McGerty and Spear 2001). No evaluation has been made of the three sites found during the 2002 survey. Twenty-one military structures on Dillingham are over 50 years of age (Table 6-24). These are all World War II military facilities built in 1942 and should be evaluated for their eligibility for the NRHP. They include air raid/fallout shelters, air field aprons and runways, and range support facilities (IARII 2003). Twelve other structures build during the Cold War era have not yet been evaluated as potentially significant Cold War properties.

**Table 6-22**  
**Summary of Known Cultural Resources at DMR**

	Archaeological Sites	Sites Listed, Eligible, or needing DE	Area Surveyed for Archaeological Sites	Buildings over 50 Years Old	Buildings Listed, Eligible, or Needing DE
Dillingham and <u>Dillingham Trail</u>	<u>24</u>	<u>24</u> (DE)	100%	21	21 (DE)

Source: IARII 2003, GANDA 2003b

### ***Potential for Unknown Resources***

Sites in the flat northerly areas of DMR tend to be of historic military significance and are in areas that have been highly disturbed by modern agriculture and runway construction. However, since this area was heavily used in prehistoric and early historic times, there is a possibility of buried archaeological sites, particularly in areas unaffected by modern land use (Handy 1940; Handy and Handy 1972; Rosendahl 1977). Sand deposits in portions of DMR may contain burials, as these have been found in dune deposits on the coastal side of Farrington Highway (Bath 1987). Figure 6-19 shows archaeological sensitivity areas at DMR.

**Table 6-23**  
**Archaeological Sites at DMR**

Site No.	Description	Use	Period
191	Paved platforms, terraces, Kawaihoa Heiau	Religious	Prehistoric
416	Terraces, stacked stone walls, walled enclosures, Keālia-Kawaihāpai Complex	Agriculture	Prehistoric/historic
5479	Concrete buildings (2)	Communication	WW II
5480	Wooden structure	Cattle chute	ranching
5481	Cement structures (4)	Waste water	Military
5482 **	Cement-lined well	Agriculture	Historic
5483	Terraces, walls, mounds	Habitation, agriculture, ranching	Traditional, historic
5484	Terraces, modified boulders	Traditional agriculture, temporary habitation, historic	Traditional, historic
5485	Terraces, enclosures, walls	Agriculture, ranching	Traditional, historic
5486	Terraces, modified overhangs, walls	Temporary habitation, agriculture	Traditional
5487	Terraces, roads	Military, early agriculture	Historic
5488	Roads, cement structures	Military	WW II, 1960s
5489	Cement, basalt structures	Military	1940s-1970s
5490	Excavated channels	Water control	Historic
5491	Terraces, modified wet cave	Agriculture	Traditional, historic
5492	Concrete buildings (2)	Nike missile installation	1960s
D1	Underground cement tank	Military	Historic
D2	Cement foundation	Military	Historic
D3	Cement bunker with lookout	Military	WWII
<u>G-1</u>	<u>Wilson ditch</u>	<u>Agricultural - irrigation</u>	<u>Historic</u>
<u>G-2</u>	<u>Halstead mill</u>	<u>Agriculture - milling</u>	<u>Historic</u>
<u>G-3</u>	<u>Concrete bridge</u>	<u>Transportation</u>	<u>Historic</u>
<u>G-4</u>	<u>Concrete bridge</u>	<u>Transportation</u>	<u>Historic</u>
<u>G-5</u>	<u>Concrete bridge</u>	<u>Transportation</u>	<u>Historic</u>

Sources: IARII 2003; GANDA 2003b

**Table 6-24**  
**Historic Military Buildings on DMR**

<b>Facility No.</b>	<b>Description</b>	<b>Year Built</b>	<b>Historical Period</b>
00316	Air/fallout shelter	1942	World War II
00343	Air/fallout shelter	1942	World War II
00638	Range support facility	1942	World War II
00651 **	Range support facility	1942	World War II
00700	Air/fallout shelter	1942	World War II
00701 **	Air/fallout shelter	1942	World War II
00702	Air/fallout shelter	1942	World War II
00703	Air/fallout shelter	1942	World War II
1111B	Fw runway surface	1942	World War II
11201	Fw taxiway surface	1942	World War II
11202	Fw taxiway surface	1942	World War II
11203	Fw taxiway surface	1942	World War II
11204	Fw taxiway surface	1942	World War II
11301	Fw pk apron surface	1942	World War II
11302	Fw pk apron surface	1942	World War II
11303	Fw pk apron surface	1942	World War II
11304	Fw pk apron surface	1942	World War II
11310	Fw pk apron surface	1942	World War II
11601 **	Ac maint apron surface	1942	World War II
12601 **	Truck loading/unloading	1942	World War II
84100 **	Water treatment building	1942	World War II

\*\*Structure is listed on the DPW real property list but is not shown on the installation real property map.  
Source: IARII 2003

[Figure 6-19](#)

Archaeological Sensitivity Areas, Dillingham Military Reservation

### 6.11.2 Environmental Consequences

#### Summary of Impacts

There could be significant impacts on archaeological resources from training activities at DMR. Significant impacts on ATIs could also result from construction and training. As explained in the mitigation sections below, the severity of these impacts will be mitigated by compliance with the PA the Army has developed in consultation with the Hawai'i SHPO, the ACHP, and others. The PA is provided in Appendix J.

**Table 6-25**  
**Summary of Potential Cultural Resources Impacts at DMR**

Impact Issues	Proposed Action	Reduced Land Acquisition	No Action
Impacts on historic buildings	○	○	○
Impacts on archaeological resources from range and facility construction	○	○	○
Impacts on archaeological resources from training activities	⊗	⊗	⊙
Impacts on archaeological sites from construction of FTI	⊙	⊙	○
Impacts on ATIs	⊗	⊗	○
Impacts on archaeological sites from road or trail construction	⊗	⊗	○
Impacts on archaeological sites from road use	⊙	⊙	○

In cases when there would be both beneficial and adverse impacts, both are shown on this table. Mitigation measures would only apply to adverse impacts.

\* Impacts may be mitigable to less than significant.

#### LEGEND:

⊗ = Significant	+	= Beneficial impact
⊗ = Significant but mitigable to less than significant	N/A	= Not applicable
⊙ = Less than significant		
○ = No impact		

There are significant but mitigable to less than significant impacts on archaeological resources from the construction of roads and trails. Mitigation measures for archaeological resources that may be affected by road or trail construction will include evaluation of NRHP eligibility and avoidance or data recovery of significant eligible sites.

Less than significant impacts are expected on archaeological sites from constructing the FTI antenna and from using Dillingham Trail.



### ***Proposed Action (Preferred Alternative)***

#### Significant Impacts

Impact 1: Impacts on archaeological resources from training activities. Training would be conducted at DMR by squad-, platoon-, and company-size units of the Stryker Brigade. In general this training would involve the same size units and the same training activities as are currently conducted by the Army at DMR. The difference between current use and proposed use concerns the use of Stryker vehicles, which have the potential to affect archaeological sites in ways that current maneuvers do not, potentially damaging cultural resources. Most of the unconstrained area for off-road maneuvers with Strykers consists of the level ground in the north and central portion of DMR, although a small area in the southeast corner of the installation is also mapped as unconstrained. If tactical vehicles are permitted to move freely in all areas now mapped as unconstrained, some sites that are recommended as eligible for the NRHP could be adversely affected.

Training would occur in areas that are marked as moderate or high sensitivity in regard to the probability of encountering archaeological sites. However, in the level areas, the main concern is the potential for subsurface cultural deposits, especially human burials. Unless these deposits are near the surface, adverse effects from tactical vehicle training should be minimal.

Because most archaeological sites at DMR are on the densely vegetated steep slopes of the Wai'anae Mountains in the south portion of the installation, Strykers will not be able to maneuver off-road in the vicinity of these sites. However, in one area in the southeast, with gentler slopes and less dense vegetation, natural conditions will not restrain Stryker mobility.

Sites 5481, 5484, and 191 are within or adjacent to this unconstrained area. Native Hawaiians consider Site 191, Kawailoa Heiau, sacred.

In addition to the potential impact on archaeological sites, a series of dredged channels lie below the sites at the higher elevations, in the area between the base of the mountain range and the flats. McGerty and Spear (2001) note that the features "average 4.50 m (14.8 ft), bottom width, to 9.00 m (30 ft) top width, by 3.00 m (9.8 ft) to 5.00 m (16.5 ft) high on each side." These channels at the bottom of the mountains in the southern and southeastern portion of DMR will be avoided by the Proposed Action because they protect the northern flats from possible flooding (McGerty and Spear 2001).

As mentioned above, one of the major cultural resource concerns at DMR is the potential for human burials and buried cultural deposits in the sand deposits in the coastal half of the installation. The primary area of concern would be the high sensitivity areas around the runways. The mitigation measures below will reduce the severity of the impact but not to less than significant levels.

Regulatory and Administrative Mitigation 1. The Army will evaluate archaeological sites within training areas related to SBCT. Sites determined to be eligible for the NRHP and sites pending evaluation will be identified and avoided through protective measures, to the full

extent practicable. If avoidance of identified archaeological sites or newly discovered sites is not feasible, the Army will consult in accordance with the PA to determine the appropriate mitigation for the damage to the sites, such as data recovery or other mitigation measures. To address the accidental discovery of archaeological sites, human remains, or cultural items, the Army has developed an IDP as part of the PA.

The Army will monitor any subsurface excavations in the coastal area and the high sensitivity area around the runways area. The Army will place constraints on any training activities that might involve substantial below surface impacts.

*Impact 2: Impacts on Areas of Traditional Importance.* The archaeological survey of the proposed alignment has not necessarily identified TCPs or ATIs, although some of the archaeological sites identified might be considered ATIs, including gravesites and temples or heiau. Site 191, in the southeast of DMR, Site 191, the Kawaihoa Heiau, is known as a sacred site. Construction activities and use of Dillingham Trail could damage or destroy such resources as a result of direct or indirect activities, as described in Impact 1. The mitigation measures below will reduce the severity of the impact but not to less than significant levels.

*Regulatory and Administrative Mitigation 2.* Facility construction or training area uses will be designed to avoid identified traditional places and limit visual impacts on TCPs by site location, design, and orientation, where feasible.

If avoiding identified TCPs or ATIs is not feasible because of interference with the military mission or risk to public safety, the Army will consult with the SHPO and Native Hawaiians in accordance with the PA to identify impacts and to develop appropriate mitigation measures. Mitigation for impacts on the cultural landscape could include consulting with Native Hawaiians and having a cultural monitor oversee construction.

The Army will continue to provide Native Hawaiians with access to traditional religious and cultural properties, in accordance with AIRFA and Executive Order 13007, on a case-by-case basis. This access program will be expanded to include new land acquisitions.

The Army previously identified Native Hawaiian burial sites in the SBCT ROI. The Army completed notification and consultation for these burial sites, in accordance with NAGPRA, and left these human remains in place. To address any impacts on any burial sites, or an inadvertent discovery of Native Hawaiian human remains or funerary objects, the Army will abide by all notification and consultation requirements outlined in Section 3 of NAGPRA.

#### *Significant Impacts Mitigable to Less Than Significant*

*Impact 3: Impacts on archaeological resources from Dillingham Trail construction.* Construction of Dillingham Trail between DMR and SBMR would involve a corridor 15 feet (4.6 meters) wide with 3-foot-wide (0.9-meter-wide) shoulders on both sides.

Constructing Dillingham Trail would involve vegetation removal and grading soil, as well as the regular use of heavy equipment. All of these activities could result in destruction or damage of archaeological resources or indirect damage by contributing to soil erosion.

Additionally, construction activities could expose or disturb previously undiscovered cultural resources. Dillingham Trail crosses areas with some potential for archaeological resources and several areas with very low potential due to heavy recent agricultural disturbance.

One identified archaeological site, Site 5480 (a ranching period cattle chute), is at the east end of the access road/runway near the sub-installation boundary. If the trail were to connect with the existing road and alterations or widening is required, Site 5480 could be affected. The five historic period sites (Wilson Ditch, Halstead Mill, and the three bridges), discovered along the Dillingham Trail proposed alignment, could be affected if widening is required or from vibrations from heavy equipment. The mitigation measures and implementation of the PA will reduce any impacts on archaeological resources to less than significant.

Regulatory and Administrative Mitigation 3. The Dillingham Trail alignment between DMR and SBMR has been surveyed for cultural resources. In accordance with the PA, the Army will identify cultural properties, will evaluate cultural properties for NRHP eligibility, and will implement avoidance strategies to the full extent practicable. GIS and GPS information will be provided to project designers to ensure sites are considered in the design and construction of all the proposed military vehicle trails and training roads in WPAA. If it is not possible to avoid archaeological sites, the Army will consult in accordance with the PA to determine the appropriate mitigation for the damage to the sites, such as data recovery or other mitigation measures. To address the accidental discovery of archaeological sites, human remains, or cultural items, the Army has developed an IDP as part of the PA.

#### Less than Significant Impacts

Impacts on archaeological sites from construction of FTI. The FTI project at DMR would construct two antennas within the installation boundary and one on Dillingham Ridge to the southwest of the installation. These would each require construction of a 15-foot (4.5-meter) by 20-foot (6.1-meter) concrete pad supporting an equipment tower and shed. Construction of the pad, shed, and support structure would require vegetation grubbing, site grading and leveling, some subsurface excavation, and the use of heavy construction equipment. These activities could damage or destroy previously undiscovered archaeological resources, as described above. However, the Army has conducted pedestrian surveys of the areas designated for construction and identified no cultural resources on the proposed antenna sites; additionally, indications suggest that no subsurface deposits exist, as at least one of the sites on the installation has been previously disturbed (Zulick and Lucking 2002). To ensure no impact on cultural resources, the Army will monitor to protect subsurface cultural resources discovered during construction activities.

Impacts of road use on archaeological resources. The regular use of Dillingham Trail by Army forces would result in increased access by ground troops into the area (resulting in possible vandalism of archaeological sites), possible off-road vehicular movement, and erosion from road use and maintenance. The trail alignment has been surveyed, but it is possible that archaeological sites are within the buffer zone. Troop movements along Dillingham Trail could cause site destruction or damage to archaeological resources directly through vandalism or accidental damage, or indirectly through soil erosion. After construction is completed, installation cultural resources staff will regularly monitor the trail and inspect for

any damage to archaeological sites. Soldiers and installation personnel will receive instruction regarding avoidance of identified sites, as outlined in the IDP.

### ***Reduced Land Acquisition Alternative***

The impacts associated with RLA Alternative would be identical to those described for the Proposed Action.

### ***No Action Alternative***

Under No Action, there would be no significant impacts on cultural resources at DMR. Dillingham Trail and the FTI would not be constructed, so there would be no risk of damage to known or undiscovered archaeological resources.

### ***Less than Significant Impacts***

Impact on archaeological resources from training activities. Ongoing training activities at DMR would include continued off-road vehicle use. This would result in ongoing impacts on cultural resources in the training area caused by ground troop activities, off-road vehicle movement, and subsurface excavations. Archaeological resources on the training areas are monitored following exercises to document adverse effects on the sites. Under No Action, current training would continue and there would be no additional impacts on cultural resources or changes in cultural resources management policies. USARHAW will continue efforts to inventory eligible historic properties in compliance with Section 110 of the NHPA, and future project planning will comply with Section 106 and its implementing regulations. Impacts on cultural resources will be mitigated in compliance with these regulatory requirements.

### ***No Impacts***

Other activities at DMR under No Action include regular use of runways for military exercises; however, these activities have no impact on cultural resources at the installation. Army activities at DMR would include regular inventories and maintenance of cultural resources in compliance with federal law and current management practices. Under the status quo of No Action, impacts on cultural resources would continue at current levels.